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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

ATTENTION: HONORABLE
Commissioner for Patents

P.O. Box 1450

In re the Patent of: **YOKOTA, Yatsuharu** P.T.O. Confirmation No.: **6160**

Patent No. **7,690,550** Issued: **April 6, 2010**

For: **REFLOW SOLDERING APPARATUS**

REQUEST FOR CERTIFICATE OF CORRECTION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Mail Stop DAC
April 27, 2010

Sir:

The undersigned requests that a Certificate of Correction be issued for the above-identified patent as indicated on the attached Form PTO-1050.

This request is being made in order to correct the **errors in claim 2: column 11, line 44 and claim 4: column 12, lines 35 and 54.** Please replace "alone" by **"along"** . It is respectfully submitted that no new matter has been added.

Since this error is a Patent and Trademark Office printing error, it is respectfully submitted that no fee is required.

Respectfully submitted,

KRATZ, QUINTOS & HANSON, LLP

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Reg. No. 27,133

Certificate
APR 29 2010
of Correction

DWH/evb

Atty. Docket No. **031265**
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PATENT & TRADEMARK OFFICE

Enclosures: PTO-1050, marked-up relevant pages of claims of Amendment filed 7/28/09 and of Patent

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO.: **7,690,550**
DATED : **April 6, 2010**
INVENTOR(S): **YOKOTA, Yatsuharu**

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

On the Claim 2:

In column 11, line 44, **"alone"** should be **–along–**

On the Claim 4:

In column 12, line 35, **"alone"** should be **–along–**

In column 12, line 54, **"alone"** should be **–along–**

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Patent No.:**7,690,550**

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@ 30¢ per page
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FORM PTO 1050 (REV. 3/82)

Claim 2 (Canceled)

Patented as claim 2

Claim 3 (Currently amended): A reflow soldering apparatus comprising a conveyor adapted to travel in a plane along a transport line so as to transport circuit boards mounted with electronic components into multiple chambers contained in the apparatus, blowing means installed in said chambers, [[and]] each blowing means having a rotating shaft perpendicular with respect to the plane of travel of the conveyor ~~vertical rotating shafts respectively~~, a first casing member having a fan storage section housing said blowing means and a gas guide section extending from said fan storage section in a direction perpendicular to [[a]] the transport line of said conveyor, a second casing member connected to said gas guide section of said first casing member and having multiple heated gas nozzle holes on the side facing said conveyor, and a gas circulated by said blowing means and heated while passing through a heater installed within said apparatus and entered said second casing member from said gas guide section of said first casing member to be blown from said nozzle holes onto said circuit boards on said conveyor, wherein said blowing means are arrayed offset up and down in a plane that is parallel to the plane of travel of the conveyor such that[[,]] said adjacent blowing means ~~are installed to~~ overlap along a line that is perpendicular to the plane of travel of the conveyor ~~as seen vertically~~, and said first casing member and said second casing member have a width smaller than the diameter of said blowing means.

Claims 4-7 (Canceled)

Patented as claim 4

Claim 10: (Currently amended): A reflow soldering apparatus comprising a conveyor adapted to travel in a plane along a transport line so as to transport circuit boards mounted with electronic components into multiple chambers contained in the apparatus, blowing means installed in said chambers, [[and]] each blowing means having a rotating shaft perpendicular with respect to the plane of travel of the conveyor ~~vertical rotating shafts respectively~~, a first casing member having a fan storage section housing said blowing means and a gas guide section extending from said fan storage section in a direction perpendicular to [[a]] the transport line of said conveyor, a second casing member connected to said gas guide section of said first casing member and having multiple heated gas nozzle holes on the side facing said conveyor, and a gas circulated by said blowing means and heated while passing through a heater installed within said apparatus and entered said second casing member from said gas guide section of said first casing member to be blown from said nozzle holes onto said circuit boards on said conveyor, wherein said blowing means are arrayed offset up and down in a plane that is parallel to the plane of travel of the conveyor such that[[,]] said blowing means storage sections of the adjacent first casing members ~~are installed to~~ overlap along a line that is perpendicular to the plane of travel of the conveyor ~~as seen vertically~~, and said first casing member and said second casing member have a width smaller than the diameter of said blowing means.

Claim 11 (Canceled)

shafts of the fans may be tilted in a direction to form an angle with the transport line of the conveyor.

There are no particular restrictions on the inclined angle of the rotating shaft of the fan and the rotating shaft may for example be arranged at 90 degrees or in others words in a horizontal position, etc.

INDUSTRIAL APPLICABILITY

The present invention as described above can provide a reflow soldering apparatus with both superior performance and a compact design, so that the space for installing an apparatus can be made small and the reflow soldering apparatus of the present invention is therefore effective for soldering of the electronic components on the circuit boards.

The invention claimed is:

1. A reflow soldering apparatus comprising a conveyor adapted to travel in a plane along a transport line so as to transport circuit boards mounted with electronic components into multiple chambers contained in the apparatus, blowing means installed in said chambers, each blowing means having a rotating shaft perpendicular with respect to the plane of travel of the conveyor, a first casing member having a fan storage section housing said blowing means and a gas guide section extending from said fan storage section in a direction perpendicular to the transport line of said conveyor, a second casing member connected to said gas guide section of said first casing member and having multiple heated gas nozzle holes on the side facing said conveyor, and a gas circulated by said blowing means and heated while passing through a heater installed within said apparatus and entered said second casing member from said gas guide section of said first casing member to be blown from said nozzle holes onto said circuit boards on said conveyor, wherein said blowing means are arrayed offset to the left and right along a plane that is parallel to the plane of travel of the conveyor such that said blowing means overlap along a line that is perpendicular to the transport line of the conveyor in the plane that is parallel to the plane of travel of the conveyor, and said first casing member and said second casing member have a width smaller than the diameter of said blowing means.

2. A reflow soldering apparatus comprising a conveyor adapted to travel in a plane along a transport line so as to transport circuit boards mounted with electronic components into multiple chambers contained in the apparatus, blowing means installed in said chambers, each blowing means having a rotating shaft perpendicular with respect to the plane of travel of the conveyor, a first casing member having a fan storage section housing said blowing means and a gas guide section extending from said fan storage section in a direction perpendicular to the transport line of said conveyor, a second casing member connected to said gas guide section of said first casing member and having multiple heated gas nozzle holes on the side facing said conveyor, and a gas circulated by said blowing means and heated while passing through a heater installed within said apparatus and entered said second casing member from said gas guide section of said first casing member to be blown from said nozzle holes onto said circuit boards on said conveyor, wherein said blowing means are arrayed offset up and down along a plane that is parallel to the plane of travel of the conveyor such that said blowing means overlap along a line that is perpendicular to the plane of travel of the conveyor, and said first casing member and said second casing member have a width smaller than the diameter of said blowing means.

3. A reflow soldering apparatus comprising a conveyor adapted to travel in a plane along a transport line so as to transport circuit boards mounted with electronic components into multiple chambers contained in the apparatus, blowing means installed in said chambers, each blowing means having a rotating shaft perpendicular with respect to the plane of travel of the conveyor, a first casing member having a fan storage section housing said blowing means and a gas guide section extending from said fan storage section in a direction perpendicular to the transport line of said conveyor, a second casing member connected to said gas guide section of said first casing member and having multiple heated gas nozzle holes on the side facing said conveyor, and a gas circulated by said blowing means and heated while passing through a heater installed within said apparatus and entered said second casing member from said gas guide section of said first casing member to be blown from said nozzle holes onto said circuit boards on said conveyor, wherein said blowing means are arrayed offset to the left and right along a plane that is parallel to the plane of travel of the conveyor such that said blowing means storage sections of the first casing members overlap along a line that is perpendicular to the transport line of the conveyor in the plane that is parallel to the plane of travel of the conveyor, and said first casing member and said second casing member have a width smaller than the diameter of said blowing means.

4. A reflow soldering apparatus comprising a conveyor adapted to travel in a plane along a transport line so as to transport circuit boards mounted with electronic components into multiple chambers contained in the apparatus, blowing means installed in said chambers, each blowing means having a rotating shaft perpendicular with respect to the plane of travel of the conveyor, a first casing member having a fan storage section housing said blowing means and a gas guide section extending from said fan storage section in a direction perpendicular to the transport line of said conveyor, a second casing member connected to said gas guide section of said first casing member and having multiple heated gas nozzle holes on the side facing said conveyor, and a gas circulated by said blowing means and heated while passing through a heater installed within said apparatus and entered said second casing member from said gas guide section of said first casing member to be blown from said nozzle holes onto said circuit boards on said conveyor, wherein said blowing means are arrayed offset up and down along a plane that is parallel to the plane of travel of the conveyor such that said blowing means storage sections of the first casing members overlap along a line that is perpendicular to the plane of travel of the conveyor, and said first casing member and said second casing member have a width smaller than the diameter of said blowing means.

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